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EXAMINER

NGO, HUYEN LE

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 08/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

08/770,792

Applicant(s)

KOYAMA ET AL.

Examiner

Julie-Huyen L. Ngo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4,6,13,14,17,21-25,30,31,35,36,40-42,44,61-64 and 69-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4,6,13,14,17,21-25,30,31,35,36,40-42,44,61-64 and 69-72 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 42
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

Claim 4 is objected to because of the recitation "said TFT substrate," in lines 2 and 3, lacks antecedence since claim 4 is depended from claim 17, which recites "a first substrate". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4, 6, 17, 21-25, 30, 31, 35 36, 40-42, and 46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. These claims contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In line 9 of claims 17, "a sealing material sealing over said liquid crystal material". It appears from figs. 1 and 9 that the sealing material seals around the liquid crystal material.

A similar problem as set forth above in claim 17 exists in claims 21-25.

Claims 4, 6, 30, 31, 35 36, 40-42, and 46 are rejected as bearing the defects of the claims from which they depend.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 4, 6, 13, 14, 17, 21-25, 30, 31, 35, 36, 40-42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawatsubashi et al. (U.S. 5,148,301).

Since the method claims are just the steps of forming the elements of the device, the method claims would have been obvious in view of the device. Therefore, the method claims are treated below with the corresponding device claims.

Sawatsubashi et al. disclose (Cols. 4-6 and Figures 3-5) an active matrix liquid crystal display (LCD) comprising:

- a plurality of pixel TFTs (104) arranged in rows and columns over a TFT/first substrate (101) and arrayed in a matrix;
- a counter substrate (102) located opposite to said first substrate;
- a layer of a liquid crystal material (109) provided between said first substrate (101) and said counter substrate (102);
- a bus line (Gm/Dn) provided over said first substrate and connected with at least one of said pixel TFTs;
- a sealing material (108) sealing said liquid crystal material (109) and provided between said first substrate (101) and said counter substrate (102), said sealing material provided outside at least said pixel TFTs; and

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- a control circuit comprising a control circuit chip (112a/112b or 113a/113b) provided under and in contact with said sealing material (108), said control circuit provided over said first substrate (see figs. 3-4)

The first and counter substrates of said LCD were cut outside said sealing material 108 having said control circuit under and in contact with said sealing material.

Claims 61-64 and 69-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (APA) in view of Inoue et al. (U.S. 5854664), McClelland et al (US4695490), Sasaki et al (US 4494825) or Kamoi et al.

APA discloses (p.2, lines 14-23, Figs 2-6) a conventional active matrix liquid crystal display comprising all the elements recited in claims 61-64 and 69-72 exclusive of:

- a non-conductive or weakly conductive material applied to the side edge of the TFT substrate (505), the side edge of the counter substrate (501) and the part of the bus line located adjacent to a side edge of said first substrate (504)

Wherein said non-conductive or weakly conductive material is provided on an outer side of the sealing material (502).

Although the APA device does not explicitly mention about a channel formation region, which provides in a semiconductor film provided in the first substrate, and a gate electrode with a gate insulating film there between, which has a thickness of 500 to 2000Å, it is well known and conventional in the art for a semiconductor device to

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comprise a TFT having such a layer structure with a gate insulating film thickness of 500-2000Å. Therefore, the APA device would obviously comprise all of these features.

Moreover, it is well known and conventional in the art to provide a non-conductive or weakly conductive material to cut side edges of glass substrates and cut side edge of a bus line to seal the cut side edges of a liquid crystal display device (LCD) to prevent the leakage of liquid crystal material and to prevent contaminate to the liquid crystal material, as taught by Inoue et al (col. 9, lines 25-31), McClelland et al. (col. 1, line 9-col. 2, line 26), and Sasaki et al. (Figure 2, col. 2, lines 35-48).

Further more, as evidenced by Kamoi et al., who teaches (see Fig. 5b) applying a second sealing layer 6 outside of the first sealing layer 5 to seal the sides edges of the substrates to prevent any adverse influences that are exerted to the liquid crystal material and orientation films. Doing so would prevent the leakage of liquid crystal material and obviated the generation of defective orientation. As a result, the resistance to high temperature and high humidity can be improved, and the reliability of a display device is improved.

Therefore, it would have been obvious for one of ordinary skill in the art to provide a non-conductive or weakly conductive material to the cut side edges of the substrates and bus line (504) in the APA device for completely sealing said side edges and said bus line, as taught by Inoue et al, McClelland et al, Sasaki et al. or Kamoi et al. to prevent the leakage of the liquid crystal material and any contaminate to the liquid crystal material, and to obviate the generation of defective orientation. Wherein the

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resistance to high temperature and high humidity can be improved, and the reliability of APA display device is improved.

Thus claims 61-64 and 69-72 would have been obvious over Applicant's admitted Prior Art (APA) in view of Inoue, McClelland, Sasaki, or Kamoi et al. as applied above.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 4, 6,13,14, 17, 21-25, 30, 31, 35, 36, 40-42, 44, 61-64 and 69-72 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of Koyama et al (U.S. 6246454) in view of Inoue et al (U.S. 5854664), McClelland et al (US4695490), Sasaki et al (US 4494825), or Kamoi et al. (JP 61029821A published in 2/10/1986, submitted in Applicants' IDS paper no. 42) as set forth below:

Claims 17-19 and 25 of Koyama comprise all the limitations of claims 4, 6,13, 14, 17, 21-25, 30, 31, 35, 36, 40-42, 44, 61-64 and 69-72 exclusive of:

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\_ a non-conductive or weakly conductive material applied to the side edge of the first/TFT substrate, the side edge of the counter substrate and the part of the bus line located adjacent to said edge of the first substrate, wherein said non-conductive or weakly conductive material is provided on an outer side of a sealing material (903)

\_ a channel formation region provided in a semiconductor film provided in the first substrate, and a gate electrode with a gate insulating film there between, which has a thickness of 500 to 2000 Å

However, the limitations of the channel formation region are fully disclosed in Koyama device (col. 3, lines 45-50 and col. 5, lines 31-41), and although claims 17-19 and 25 of Koyama do not explicitly include all of these limitations, it is understood that these claims are inherently included more than what being recited since the claim language in Koyama states that "An active matrix liquid crystal display **comprising**." This language encompasses for more than what was being recited in the claims.

Further more, any features that are not recited in a claim, but disclosed in the disclosure; it is indicated that the features are not critical and essential to the invention.

Nevertheless, the set forth above features are well known and conventional for one of ordinary skill in the art to make and use such features, particularly the application of the non-conductive or weakly conductive material to the sides edges of the substrates as set forth above in the rejection, as evidenced by Inoue, McClelland, Sasaki or Kamoi et al. teachings.

Therefore, it would have been obvious for one of ordinary in the art to modify Koyama display device with a second sealing layer/nonconductive material applying to



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the outside of the first sealing member to seal the sides edges of the substrates for preventing any adverse influences that are exerted to the liquid crystal material and orientation films. Doing so would prevent the leakage of liquid crystal material and obviate the generation of defective orientation. As a result, the resistance to high temperature and high humidity can be improved, and the reliability of the Koyama display device is improved.

Therefore, claims 4, 6, 13, 14, 17, 21-25, 30, 31, 35, 36, 40-42, 44, 61-64 and 69-72 would have been obvious over the disclosed device and claims 17-19 and 25 of Koyama, and further in view of Inoue, McClelland, Sasaki or Kamoi et al.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zhang et al. (US 6288764 B1) disclose a display device or electronic device having a peripheral driving circuit formed under the sealing region.

### ***Response to Arguments***

Applicant's arguments filed July 3, 2003 have been fully considered but they are not persuasive.

Applicants' arguments are following:

1) Sawatsubashi does not describe or suggest a control circuit chip provided under and in contact with the sealing material. Also Applicants mention that "Sawatsubashi states (col. 5, lines 12-16) that the control signals for driving circuits are

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provided outside of the display device, thus suggesting that any type of control circuit associated with the driving circuit is outside of the display device.”

2) The APA, Inoue, McClelland, and Sasaki do not describe or suggest applying a nonconductive material to the outer side of sealing material to prevent static charge from generating at a side edge of the substrates and the part of the bus line adjacent to the side edge of the first substrate, or for any other purpose.

Examiner's responses are following:

1) Sawatsubashi teaches (col. 4 lines 50-57) that “a driving circuit is provided between the outer edges of the display region defined between the substrates 101 and 102 and the outer edges of the seal member 108. In this arrangement, the driving circuit is provided with drain line driving circuits 112 for supplying data signals to the pixel electrodes 103 and gate line driving circuits 113 for controlling the TFTs 104, each of which is provided for the respective pixel electrode 103”. Therefore, at least the driving circuit 113 is functioned as a control circuit (fig. 5) for controlling the TFTs 104. Furthermore, one of ordinary skill in the art would have realized that the control circuit 113 comprises a control circuit chip since they are constituted of an integrated circuit (col. 4, lines 57-66). The control circuit 113 is under the sealing member 108 and in contact with said sealing member.

In response to Applicants' statement regarding the control signals for driving circuits that are provided outside of the display device, and that any type of control circuit associated with the driving circuit is outside of the display device, one of ordinary skill in the art would have known that although some of the circuits, e.g. 112/113 are

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provided inside and under the sealing member 108, there must be some sources of input signals/voltage come from the outside of the display to provide control/activate/drive the elements or circuits, e.g., the pixel TFTs 104, the driving/controlling circuits 112,113, which located inside the display device and/or under the sealing member 108.

Therefore, the claimed recitation is fully met by Sawatsubashi.

2) In response to applicant's argument that the references of APA, Inoue, McClelland, and Sasaki fail to suggest an intended use of the claimed invention, it is noted that the intended use, "to prevent static charge from generating at a side edge of the substrates and the part of the bus line adjacent to the side edge of the first substrate, or for any other purpose," upon which applicants are alleging were not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further more, Applicants are to note that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

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In this case, the APA device as modified above has the same structure as the claimed invention and therefore capable of performing the intended use.

Never the less, Applicants are to note that APA device was applied as a primary reference, which comprises the sealing material (502). Inoue, McClelland, and Sasaki were provided as secondary references and as evidences to show that it is well known in the art to apply a nonconductive or weakly conductive material to side edges of the substrates for preventing contaminate to the liquid crystal material and leakage of the liquid crystal material. This structure could probably prevents static charge from generating at a side edge of the substrates since the structure of Sawatsubashi device as modified has the same structure as the claimed structure. Therefore, it is capable of performing the same intended use.

However, the reference of Kamoi et al. (JP 61029821A published in 2/10/1986) submitted by Applicants (IDS paper no, 42) has been provided in this Office action to further show (see Fig. 5b) that the practice of applying second sealing layer 6/nonconductive material or weakly conductive material out side of the first sealing layer 5 to seal the sides edges of the substrates is a well known and conventional in the liquid crystal art to prevent any adverse influences that are exerted to the liquid crystal material and orientation films. Doing so would prevent the leakage of liquid crystal material and obviated the generation of defective orientation. Therefore, the resistance to high temperature and high humidity can be improved, and the reliability of the display device is improved.

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Applicants are to note that obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art.

See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

**Contact Information**

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie-Huyen L. Ngo whose telephone number is (703) 305-3508. The Examiner can normally be reached on T-Friday.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Mr. Robert H. Kim can be reached at (703) 305-3492.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

August 1, 2003



*Julie-Huyen L. Ngo*  
**Patent Examiner**  
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